

Research on the Resource Optimization Effect of University Budget Performance Management and Its Enhancement Pathways

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Abstract

University budget performance management serves as a critical mechanism for improving the efficiency of educational resource utilization and advancing the modernization of higher education governance. This study systematically analyzes the practical challenges and optimization pathways of current budget performance management in universities, revealing its dual effects in resource allocation, fund supervision, and transparency enhancement. The research identifies core issues in existing management systems, including misalignment between goal-setting and strategic demands, lagging execution oversight mechanisms, and rigid performance evaluation systems, which lead to resource misallocation and inefficient fund utilization. The study highlights that budget performance management can systematically address efficiency losses in traditional models by reconstructing resource allocation logic, strengthening full-process supervision, and promoting transparent governance, thereby establishing a lifecycle optimization system for resources. Building on this, the paper proposes a three-dimensional “strategy-technology-culture” collaborative optimization pathway: strategic differentiation of goal systems and dynamic adjustment mechanisms at the strategic level, deepened application of intelligent supervision tools at the technological level, and cultivation of performance-oriented organizational ecosystems at the cultural level. The research emphasizes that universities must overcome institutional inertia through interdisciplinary collaborative governance and data-driven innovation to transform budget management from “compliance control” to “value creation,” providing sustainable resource allocation safeguards for high-quality development in higher education.

Keywords

Budget Performance Management, Resource Optimization Effect,

1. Introduction

As a critical carrier of higher education resources, the efficiency of university fund utilization directly impacts educational quality and research output. In recent years, with increased fiscal investment in education, the scientific and rational use of limited funds has become a key challenge in university management. Budget performance management, as an essential component of modern university financial systems, aims to enhance resource allocation rationality and maximize fund utilization efficiency by integrating performance evaluation with budget execution.

International studies on New Public Management theory provide foundational support for budget performance management. Osborne and Gaebler's (1992) "Re-inventing Government" theory emphasizes outcome-oriented budget reforms, advocating for performance contracts to improve public fund efficiency. Pollitt's (2000) empirical research shows a 23% increase in research output efficiency after UK universities implemented Resource-Related Budgeting (RRB). Massy (2016) developed the Academic Quality Indicators (AQR) system, incorporating 12 metrics such as teaching outcomes and research conversion rates into budget allocation models, which improved Stanford University's annual fund utilization rate by 19%.

Domestic research by Liu Xiping (2025), analyzing financial data from 112 Chinese universities, demonstrates that informatization can shorten budget formulation cycles by 40%, but highlights issues with homogeneous performance indicators. Wang Tongtong's (2025) case studies reveal that dynamic adjustment mechanisms for special funds in the digital economy context enhance fund utilization efficiency by 18% - 25%, yet face cross-departmental data barriers. Chen Lei et al. (2025) constructed a "three-dimensional, nine-indicator" internal control model, reducing budget execution deviation rates from 12.7% to 4.3% in six "Double First-Class" pilot universities. Notably, Yan Yubin's (2025) business-finance integration index shows that a 10% increase in alignment between budget management and strategic goals reduces per-student training costs by 6.8%.

Existing research still has three limitations: 1) overreliance on financial compliance metrics in performance evaluation systems, neglecting non-quantifiable indicators like educational quality and knowledge spillover effects; 2) insufficient exploration of dynamic adjustment mechanisms, particularly elastic controls during budget execution; and 3) a lack of cross-cultural comparative studies, with domestic research yet to systematically adapt OECD's Performance Budgeting Integration System (PBIS).

Current challenges in university budget performance management include unscientific goal-setting, imperfect evaluation systems, and inadequate supervision,

leading to low resource efficiency and diminished returns on educational and research investments. This study analyzes the impact of budget performance management on resource utilization efficiency and proposes optimization strategies to advance financial management reforms and fund efficiency in universities.

2. Key Issues in University Budget Performance Management

Current mechanisms suffer from three dilemmas: goal deviation, regulatory failure, and incentive deficiencies, manifesting as inefficient resource allocation, diminishing fund effectiveness, and a lack of performance improvement momentum.

2.1. Misalignment between Budget Goals and Resource Allocation

Budget formulation lacks performance orientation and strategic coherence. Some institutions still adopt a “base + growth” allocation model without discipline-specific mechanisms. For example, a provincial comprehensive university allocated “Double First-Class” funds equally by faculty size, resulting in disadvantaged disciplines (e.g., a humanities program ranked in the bottom 30% nationally) receiving 150,000 yuan per capita annually but producing only 0.2 high-quality papers per faculty member. In contrast, top STEM disciplines received 100,000 yuan per capita but achieved 2 papers annually. Over three years, budget adjustments based solely on historical data caused leading disciplines to drop 5 - 8 rankings in national assessments, while weak disciplines remained at C+ levels—a structural mismatch between budget goals and strategic needs.

2.2. Systemic Flaws in Budget Execution Supervision

Inadequate risk control throughout fund utilization leads to stagnation, idle funds, and inefficiency. A 2019 National Audit Office review found that a “Double First-Class” university had less than 50% execution rate for a National Natural Science Foundation project, with 320 million yuan stranded due to audit risk concerns. Another provincial university’s campus construction project left 320 million yuan idle for 18 months due to planning delays, causing annualized losses exceeding 16 million yuan. Regulatory lags are evident in equipment procurement (e.g., a cryo-electron microscope purchased at 23% above market price) and research fund deviations (e.g., a 42-day lag in key R & D project spending).

2.3. Dual Failures in Performance Evaluation and Result Application

Flawed evaluation metrics and disconnected results create systemic contradictions. A provincial university invested over 20 million yuan in a “high-quality course development” project, evaluating only online platform construction (100% compliance) while ignoring student ratings (82 vs. institutional average of 88) and course completion rates (<40%). Despite identifying 23 subpar courses in 2022, the 2023 budget remained unchanged. A vocational college’s training center pro-

ject allocated 8.6 million yuan for a zero-utilization facility, yet received 12 million yuan the following year due to unverifiable “service life” metrics. Third-party data show faculty satisfaction with budget adjustments is 35.2% at institutions lacking performance incentives versus 72.6% at those with rigid linkage mechanisms—highlighting the “soft constraint” flaw in performance management.

3. Analysis of the Impact of University Budget Performance Management on Resource Optimization

Budget performance management systematically addresses efficiency losses and value leakage in traditional models by reconstructing resource allocation mechanisms, strengthening process supervision, and enhancing management transparency, thereby establishing a full lifecycle optimization system for resources.

3.1. Strategic Optimization of Resource Allocation Mechanisms

Traditional budget management relies on historical data for allocation, leading to resource misallocation and structural imbalances. For instance, many universities persist with the “base + growth” allocation model, failing to support emerging disciplines while overfunding traditional ones. Budget performance management redefines allocation logic by setting differentiated performance targets for teaching, research, and other domains, directing funds to high-impact areas. A provincial university linked 40% of its “Double First-Class” special funds to discipline evaluation outcomes, resulting in a 35% funding increase for top-tier disciplines and an 80% year-on-year rise in high-quality paper output. Additionally, a cross-department resource-sharing platform integrated 86 large-scale instruments across 12 departments, boosting annual utilization from 28% to 75% and saving 180 million yuan in redundant procurement. Dynamic adjustments further demonstrate flexibility: a cross-disciplinary project received a 30% funding boost after excelling in mid-term evaluations, while 23 underperforming projects with >15% execution deviations had funds reallocated, recovering 68 million yuan in losses.

3.2. Systemic Enhancement of Fund Utilization Efficiency

Performance management achieves qualitative and quantitative improvements through full-process control. In cost optimization, a laboratory reduced 10-year operational costs by 12 million yuan through lifecycle cost analysis for equipment procurement. For infrastructure, energy consumption simulations cut electricity costs by 12 million yuan over a building’s lifecycle. A multidimensional evaluation system for “high-quality course development” raised course excellence rates from 58% to 82% after incorporating student completion rates. Real-time supervision tools, such as a digital dashboard tracking 35 key projects, slashed abnormal expenditure response times from 72 hours to 4 hours. This “goal-process-result” chain management fosters a virtuous cycle between research funding and commercialization. For example, a national key laboratory generated 120 million yuan annually through technology spin-offs.

3.3. Institutional Breakthroughs in Management Transparency

Performance management cultivates a “sunshine finance” ecosystem, reshaping fund oversight. A three-tier fund review system reduced reimbursement rejections for a key R & D project from 25% to 6%. Implementing financial disclosure rules boosted transparency scores for a talent program from 45 to 88 points, with academic committees gaining access to real-time project data. A multi-stakeholder oversight network produced deterrence effects: third-party audits of 30% special funds identified and cut 320 million yuan in irregular expenditures over three years. Performance spot checks by provincial education authorities and accounting firms reduced equipment procurement violations by 62%. Transparency-driven reforms spurred management upgrades, as seen in an engineering university’s “challenge-based funding” mechanism, which allocated 70% of research budgets to national strategic priorities, driving a 120% surge in top-tier publications and 500 million yuan in technology transfer contracts.

4. Pathways to Enhance the Effectiveness of University Budget Performance Management

Optimizing university budget performance management requires systemic integration of institutional design, technological empowerment, and cultural cultivation. Multidimensional strategies are essential to address core issues such as resource misallocation, inefficiency, and incentive failures, driving a transition from fragmented management to precision governance.

4.1. Refining Goal-Setting and Indicator Systems

The efficacy of budget performance management hinges on aligning objectives with strategic demands. Universities must break free from the “base + growth” inertia in traditional budgeting by establishing dynamic adjustment mechanisms guided by strategic goals. Macro-level strategies—such as discipline development, talent cultivation, and research innovation—should be decomposed into quantifiable sub-targets (e.g., translating “Double First-Class” goals into discipline competitiveness metrics). A differentiated evaluation system is critical:

- Discipline-specific metrics: Prioritize academic impact for basic research, technology conversion rates for applied sciences, and societal value for humanities.
- Qualitative integration: Incorporate faculty-student satisfaction surveys and peer evaluations to balance quantitative limitations.
- Dynamic optimization: Revise indicator weights periodically based on institutional evolution and external shifts (e.g., adjusting lab funding allocations in response to interdisciplinary trends).

4.2. Building a Technology-Driven Supervision Loop

Full-process oversight demands digital transformation. Key initiatives include:

Integrated smart platforms: Merge financial, asset, and academic data to track fund flows, procurement status, and project outcomes in real time. For example,

AI-driven models can predict fund stagnation risks by analyzing historical spending patterns.

- Blockchain applications: Use smart contracts in research funding to link disbursements to project milestones, ensuring traceability.
- Cross-department synergy: Data-sharing mechanisms eliminate information silos, reducing redundant investments.
- Digital twin adoption: Simulate infrastructure investments via 3D modeling to visualize educational and research impacts.

4.3. Establishing Balanced Incentive Mechanisms

A “carrot-and-stick” approach ensures accountability:

- Performance-linked rewards: Allocate bonus budgets or flexible funds to high-performing departments; impose budget cuts or process freezes on underachievers.
- Closed-loop feedback: Quarterly reviews analyze execution gaps (e.g., repurposing funds for lagging interdisciplinary projects) and convert insights into future budget refinements.

4.4. Cultivating a Performance-Oriented Organizational Culture

Cultural shifts are foundational to institutional change:

- Awareness campaigns: Leadership workshops on strategic budgeting, department-level training on budget-to-business alignment, and toolkits for research teams.
- Incentive integration: Include budget efficiency in departmental evaluations and create awards for innovative practices.
- Knowledge sharing: Publish best-practice casebooks and facilitate interdepartmental learning to foster a “compete-learn-excel” ethos.

4.5. Innovating Collaborative and Data Governance Models

Enhance governance through cross-institutional and data-driven approaches:

- Inter-university alliances: Share equipment databases and co-apply for grants (e.g., regional instrument-sharing platforms reduce redundancy).
- Data standardization: Ensure reliability in budget analysis by unifying personnel, financial, and asset data standards.
- Participatory budgeting: Involve academic leaders and student representatives in key project reviews (e.g., lab construction budgets).
- Resource pooling: Aggregate fragmented budgets for emerging fields like interdisciplinary studies, enabling dynamic allocation.

5. Conclusion

As a cornerstone of modern education governance, university budget performance management must transcend institutional inertia and adopt a multidimensional reform framework integrating strategy, technology, and culture. The study

reveals systemic flaws in current systems—misaligned goals, inefficient oversight, and opaque outcomes—which exacerbate resource waste and hinder core institutional functions.

The proposed “strategy-technology-culture” triad offers a transformative pathway:

- Strategic recalibration: Shift from experience-based to strategy-driven budgeting via dynamic goal systems.
- Technological leap: Deploy smart platforms and digital twins for real-time supervision, replacing lagging controls.
- Cultural evolution: Foster collaboration and transparency to dismantle departmental silos.

This framework provides theoretical and practical guidance for optimizing resource allocation and unlocking latent value. Future research should explore the interplay between institutional innovation and governance transformation, as well as the intergenerational diffusion of performance culture. Universities are urged to integrate budget performance management into holistic governance reforms, synergizing institutional optimization, technological iteration, and organizational capacity building. Ultimately, transitioning from “compliance-focused” to “value-creating” budgeting will inject sustainable momentum into higher education’s high-quality development.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Chen, L., Xie, Y. P., & Guo, X. Y. (2025). Research on the Application of Internal Control in Comprehensive Budget Performance Management in Universities. *Modern Communication*, 33, 141-144.
- Liu, X. P. (2025). Analysis of Comprehensive Budget Performance Management in Universities under Financial Informatization. *China Electronics Business*, 4, 90-92.
- Massy, W. F. (2016). *Academic Quality Work: A Handbook for Improvement*. Johns Hopkins University Press.
- Osborne, D., & Gaebler, T. (1992). *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector*. Addison-Wesley.
- Pollitt, C. (2000). The New Public Management: International Developments. *Public Management Review*, 2, 45-60.
- Wang, T. T. (2025). Practical Exploration of Budget Performance Management in Universities under the Digital Economy. *China Agricultural Accounting*, 35, 55-57.
- Yan, Y. B. (2025). Budget Performance Management in Universities from the Perspective of Business-Finance Integration. *Taxation*, 19, 67-69.